PREFABRICATED BUILDING SYSTEM

FIELD OF THE INVENTION

The present invention relates to building structures, and more particularly, relates to a building structure system.

BACKGROUND OF THE INVENTION

The use of prefabricated building structures for such commonly used buildings as sheds, garages, utility buildings, etc is well known in the art. Generally, such prefabricated structures have been formed of wood and usually comprise wall sections which are prefabricated and then later assembled on site. Similarly, the floor is usually a preassembled structure often built in two or more sections which are later joined together. Subsequently, a roof is built on site.

A problem with many such structures is that they are placed on blocks which remain on the ground. During changes in the seasons and particularly in cold climates, the surface on which the structure is placed moves and accordingly will cause movement in the structure. It then frequently becomes necessary to adjust the supports in order to maintain a level structure.

A further problem associated with such building structures is that due to the supporting blocks and the inherent depth of the floor joists, the structure is raised from the ground. Accordingly, a stair structure or a ramp must be built to gain access and the space below the structure can become unattractive with unwanted animals or the like seeking refuge there.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a building assembly which is easy

to assemble and comes in a compact knocked down form.

According to one embodiment of the present invention, there is provided a building structure comprising a plurality of base members each having an inwardly facing opening, the base members extending about a perimeter of the building structure, a concrete base having portions thereof extending through the openings in the base members to thereby anchor the base members, a plurality of studs extending upwardly from the base member to form a plurality of wall sections, a plurality of rafters extending between a first opposed pair of the wall sections, and a roof mounted on the rafters.

In a further aspect of the present invention, there is provided a kit for building structure, the kit comprising a plurality of a base members each having a generally C-shaped configuration, a plurality of metallic studs, a plurality of rafters, a plurality of rafter connecters, each of the rafter connecters being a sheet metal member having slots formed therein to permit folding thereof, a plurality of rafter retainer members, the rafter retainer members comprising a sheet metal component having slots formed therein to permit bending of the member to form a substantially U-shaped component.

The building structure of the present invention is, in the preferred embodiment, comprised of metal structural components. As such, the metal structural components provide an ease of assembly and give a solid building structure.

One advantage of the preferred embodiment of the building structure of the present invention is the integration of a concrete floor which not only serves as the floor itself, but locks the structural components together. In this arrangement, the building structure may be placed directly on a suitably prepared substrate and thus obviates the need for stairs or ramps. Such structure will also ensure that problems will not be encountered

during high winds and the like. To further stabilize the structure, conventional anchors into the soil substrate may be provided.

In the preferred embodiment, the structure may be shipped as a kit in a knocked down arrangement. To do so, many of the components which would normally occupy a substantial amount of shipping space may be shipped as flat sheet metal members and formed on the site. To this end, such components may be provided with slots cut out along intended fold lines.

BRIEF DESCRIPTION OF THE DRAWINGS

Having thus generally described the invention, reference will be made to the accompanying drawings illustrating an embodiment thereof, in which:

Figure 1 is a perspective view of an assembled utility building according to one embodiment of the present invention;

Figure 2 is a perspective view thereof illustrating the building structure in a semi finished condition;

Figure 3 is an exploded view illustrating the structural components of the building system of the present invention;

Figure 4 is a side elevational view of a portion of the structural components; and

Figure 5 is a perspective view of one of the metallic components; and

Figure 6 is a cross sectional view through a lower portion of the building structure after completion of the floor.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings in greater detail and by reference characters thereto, there is illustrated in Figure 1 a building structure according to one embodiment of the

present invention which building structure is designated generally by reference numeral 10.

Figure 3 is an exploded view of the various structural components utilized in the building structure of the present invention and reference will now be had thereto.

At the bottom of the structure, there is provided a base perimeter member generally designated by referenced numeral 12 and which has a vertical outer wall 14, a top wall 16, and a bottom wall 18. Base perimeter member 12 thus has a generally C-shaped configuration with a pair of inwardly extending flanges 20, 22 located at the distal end of top wall 16 and bottom wall 18 respectively.

Mounted on top of base perimeter 12 is a bottom cap generally designated by reference numeral 24 and which includes an outer wall 26, a bottom wall 28, and a flange 30 extending upwardly from the distal end of bottom wall 28.

Arranged to fit within bottom cap 24 and secured thereto are vertical studs generally designated by reference numeral 32. Again, each vertical stud 32 has an overall C-shaped configuration with a back wall 34 and a pair of side walls 36, 38.

Mounted on top of studs 32 is a top cap 40 which also has an outer wall 42, a top wall 44 and a downwardly extending flange 46.

A finishing member designated by reference numeral 48 is provided which member also has a generally C-shaped configuration defined by an outer wall 50, a bottom wall 52, and a slightly sloping top wall 54.

A plurality of rafters 56 of a generally rectangular configuration are utilized for the roof structure and at the end of each rafter there is provided a rafter retainer generally designated by reference numeral 58 and which rafter retainer has a pair of opposed side

walls 60 and 62 and an end wall 64. Flanges 66 and 68 extend outwardly from side walls 60 and 62 respectively at the bottom or lower ends thereof.

Located centrally of rafters 56 and for connecting the rafters together, is a rafter connector 72 which has apertures 74 therein. Rafter connector 72 is of a generally U-shaped configuration having side walls 71 and 73 with a base 75.

There is also provided a ridge cap 76 and which has an inverted V-shaped top wall 78 and downwardly extending side walls 80, 82. It will be noted that recesses 84 are provided in downwardly extending side walls 80, 82 to accommodate rafters 56.

The system for the building structure also utilizes laterally extending reinforcing members 88 which, as may be seen from Figure 2, extend between studs 32 at about their midpoint.

As may be seen in Figure 3, there are provided stud members 90 which are finished with an end cap 92.

Following assembly of the structural components ground anchors 93 may be secured. Screws 75 may then secure base member 12 to concrete C. A reinforcing mesh 94 is then placed intermediate top wall 16 and bottom wall 18 of base perimeter member 12 and concrete is then poured. As will be seen in Figure 6, the concrete enters into the channel defined by top wall 16 and bottom wall 18 of base perimeter member 12 and flanges 20 and 22 are imbedded therein. This arrangement provides for an extremely solid arrangement wherein the structure is securely anchored to the concrete floor.

The building may be finished in a conventional manner with any desired wall panels 98 and a roof 100. Doors 102 may be provided for gaining access thereto. As will be seen from the above, there is thus provided a strong rigid structure which is able to

withstand the elements.

As previously discussed, the building structure of the present invention is preferably made in a kit form and to this end, many of the components can be shipped in an unassembled state and formed at the site. Thus, for example, one may refer to Figure 5 illustrating a rafter connecter 72. Rafter connecter 72 is shipped in a flat state and then bent along fold lines 106 and 108. Fold lines 106 and 108 are formed by the removal of material therein by means of slots 110 which permit the easy folding operation to become a U-shaped component as indicated by arrow 112.

In the preferred embodiment, the above defined structural components are all formed of a stamped metallic material and one thus has a structure which is resistant to many of the problems which plague wood type structures. The various components may all be connected together by means of metal screws and thus, even an amateur can assemble the components together quickly when utilizing an electric screwdriver or the like. The assembly time compared to comparable wood structures is substantially reduced.

It will be understood that the above described embodiment is for purposes of illustration only and that changes or modifications may be made thereto without departing from the spirit and scope of the invention.